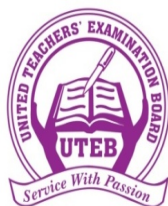


545/3
CHEMISTRY
PRACTICAL
Paper 3
AUGUST, 2019
2 hours



UTEB JOINTMOCK EXAMINATIONS 2019

Uganda Certificate of Education

CHEMISTRY

PRACTICAL

Paper 3

2 hours

INSTRUCTIONS TO CANDIDATES:

- Answer **all** questions.
- Answers are to be written in the spaces provided.
- You are not allowed to use any reference books.
- All working must be clearly shown.
- Mathematical tables, slide rules and non-programmable silent electronic calculators may be used.
- [H=1, C=12, O=16, Na=23]

For Examiner's use only

Q1	Q2	TOTAL

1.

You are provided with the following:

Solution B; A solution containing 4g of sodium hydroxide per dm^3 .

Solid X; A dibasic organic acid of relative formula mass 134

Liquid A is Distilled water

You are to determine the solubility of the acid in mol dm^{-3}

(The acid reacts with sodium hydroxide in the mole ratio 1:2)

Procedure

Place 2 spatula measures of X in a conical flask. Using a measuring cylinder measure 100cm^3 of A into the flask. Cork the flask and shake vigorously for 5 minutes to obtain a saturated solution. Filter and keep the filtrate. Label the filtrate solution "C".

Pipette 20 or 25 cm^3 of solution C into a clean conical flask. Add 2 or 3 drops of phenolphthalein indicator. Titrate with solution B from the burette to a faint persistent pink colour. Repeat the titration to obtain consistent results.

Table of results

Pipette volume = cm^3

Titre number	1	2	3
Final burette reading (cm^3)			
Initial burette reading (cm^3)			
Volume of B used (cm^3)			

Selected values for the average titre

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Average titre

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Questions

a) Determine the concentration of solution B in moles per dm^3 .

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b) Determine the moles of sodium hydroxide that reacted.

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(c) Determine the moles of the acid that reacted.

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d(i) Calculate the moles of acid in solution C in mol dm^{-3}

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(ii) Calculate the solubility of X in g dm^{-3} .

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2. Y contains two cations and one anion. Carry out the following tests on Y recording your observations and deductions in the table below. For any of the gases liberated carry out a confirmatory test.

TESTS	OBSERVATIONS	DEDUCTIONS
a) Heat 2 spatula endfuls of Y strongly till no further change. Allow the residue to stand and cool. Keep the residue for the tests below.		
(b) To the cool residue from (a) add dilute nitric acid to a third the depth of the test tube. Heat gently for 2 to 3 minutes. Cool and transfer the solution to another test tube. To this solution add excess sodium hydroxide to two-thirds the depth of the test tube and shake vigorously. Filter. Keep the filtrate and residue for the tests below.		
(c) Acidify the filtrate with dilute nitric acid divide this solution into 4 parts.		
(i) To the 1 st part add sodium hydroxide dropwise till in excess.		

(ii) To the 2 nd part add ammonia solution drop wise till in excess		
(iii) To the 3 rd part add a few drops of barium nitrate solution		

(iv) Use the 4 th part to carry out a confirmatory test of your choice for the anion.		
(d) Wash the residue from (b) and dissolve in 5cm ³ of dilute nitric acid. Divide into 2 parts.		
(i) To the 1 st part add sodium hydroxide solution dropwise till in excess.		
(ii) To the 2 nd part add ammonia solution dropwise till in excess.		

Cations in Y are:

1..... 2.....

Anion in Y is:.....

End